



# ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: CFM56-7B22/2  
 UNIQUE ID NUMBER: 4CM040  
 COMBUSTOR:  
 ENGINE TYPE: TF

BYPASS RATIO: 5.3  
 PRESSURE RATIO ( $\pi_{00}$ ): 24.6  
 RATED THRUST ( $F_{00}$ ) (kN): 101.0

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
D <sub>p</sub> /F <sub>00</sub> (g/kN) or SN	19.0	112.7	32.4	0.8
AS % OF ORIGINAL LIMIT	97.1	95.5	36.4	3.2
AS % OF CAEP/2 LIMIT (NO <sub>x</sub> )			45.4	
AS % OF CAEP/4 LIMIT (NO <sub>x</sub> )			55.6	
AS % OF CAEP/6 LIMIT (NO <sub>x</sub> )			63.1	
AS % OF CAEP/8 LIMIT (NO <sub>x</sub> )			76.2	

### DATA STATUS

- PRE-REGULATION  
 x CERTIFICATION  
 - REVISED (SEE REMARKS)

### TEST ENGINE STATUS

x NEWLY MANUFACTURED ENGINES  
 - DEDICATED ENGINES TO PRODUCTION STANDARD  
 - OTHER (SEE REMARKS)

### EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE  
 (ANNEX 16 VOLUME II)

### CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)  
 x OUT OF PRODUCTION (DATE: - )  
 - OUT OF SERVICE (DATE: - )

### MEASURED DATA

MODE	POWER SETTING (%F <sub>00</sub> )	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO <sub>x</sub>	
TAKE-OFF	100	0.7	1.008	0.06	2.18	15.08	0.7
CLIMB OUT	85	2.2	0.837	0.10	6.58	12.16	0.7
APPROACH	30	4.0	0.303	6.06	30.87	6.37	0.7
IDLE	7	26.0	0.105	7.26	45.35	3.94	0.7
LTO TOTAL FUEL (kg) or EMISSIONS (g)			389	1643	10492	3091	-
NUMBER OF ENGINES				3	3	3	3
NUMBER OF TESTS				3	3	3	3
AVERAGE D <sub>p</sub> /F <sub>00</sub> (g/kN) or AVERAGE SN (MAX)				16.3	104.2	30.6	0.7
SIGMA (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)							
RANGE (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				14.6-18.2	96.9-111.7	30.4-30.9	0.1-1.8

### ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS  
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	97.9-98
TEMPERATURE (K)	292.8-296.7
ABS HUMIDITY (kg/kg)	0.00814-0.0131

### FUEL

SPEC	Jet A
H/C	1.93-1.94
AROM (%)	18-19.2

MANUFACTURER: CFM International  
 TEST ORGANIZATION: CFM56-7B Eval Engineering  
 TEST LOCATION: Peebles Test Operation (PTO), Peebles, Ohio  
 TEST DATES: 30/08/1997-12/09/1997

### REMARKS

1. FAA Certification Report CR-997/2, 14 Nov 97
2. Engine S/N 874-136/01, 874-141/01, 874-146/01

Compliance with Fuel Venting requirements: - ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)